rejections set forth in the Office Action.

Claims 1 and 10-32 stand rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Document No. 56-150655 to Iguchi. The Applicant respectfully submits that Iguchi does not anticipate the sprocket and methods recited in claims 1 and 10-32.

Each of the claims is directed to a sprocket or method for use with a roller or bushing chain, where the roller or bushing contacts the seatings or grooves between the teeth. In contrast, Iguchi discloses a different type of chain where the teeth of the chain links contact the teeth of the sprockets in order to be driven thereby. As illustrated in Figure 4, the pins connecting the links of the chain of Iguchi do not contact the seatings grooves between the teeth in order to be driven thereby.

In addition, Iguchi does not disclose different flank profiles selected to maintain a constant spacing between the sprocket seatings between the teeth and the sprocket center, as recited in claim 1. Similarly, Iguchi does not disclose a sprocket having roots each having a root radius r_1 defined between adjacent teeth for receiving rollers of a chain where the roots having a constant root diameter d_f, as recited in claim 11 and by dependency in claims 12-15 and as recited in claim 21 and by dependency claims 22-25. Iguchi also does not disclose different flank profiles arranged in a pattern effective to reduce noise generated by contact between the roller chain and the sprocket by varying the pressure angle at which the roller chain contacts the roots while maintaining a constant root diameter d_f and a constant addendum circle diameter d_a, as recited in claim 32. Instead, as can be seen from Figure 4 of Iguchi, the distance between one of the pins (J) and the other of pins connecting the chain links varies according to the tooth profile T_0, T_1 and T_2. Thus, Iguchi teaches away from the recited sprocket tooth profiles, where the radial seating position of the chain rollers is substantially unchanged while the flank profiles vary. As set forth in the application, page 1, lines 26-28, varying the radial seating position of the chain rollers on the sprocket has the drawback of creating an excessive

tensive stress in the chain when the chain encounters successive root diameters greater than the theoretical one.

For the reasons set forth above, claims 1 and 10-32 are believed to be allowable. Reconsideration and allowance of the application are respectfully requested.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

The Commissioner is hereby authorized to charge any additional fees which may be required in this application to Deposit Account No. 06-1135.

Respectfully submitted,

FITCH, EVEN, TABIN & FLANNERY

By: _____

Jon A. Birmingham
Registration No. 51,222

Date: July 7, 2003

120 S. LaSalle Street
Suite 1600
Chicago, IL 60603-3406
Telephone: (312) 577-7000
Facsimile: (312) 577-7007

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Upon entry of the present amendment, claims 10-22, 25 and 30-32 are amended as follows:

10. (Once Amended) A sprocket for a roller or bushing chain and sprocket system, the sprocket comprising:

a plurality of teeth disposed about the circumference of the sprocket, the sprocket teeth each having a flank profile; and

at least a first flank profile and at least a second flank profile, the second flank profile being different from the first flank profile, the first and second flank profiles arranged in a pattern effective to reduce noise generated by contact between the chain and the sprocket.

11. (Once Amended) A sprocket for a roller or bushing chain and sprocket system according to claim 10, wherein roots each having a root radius r_1 are defined between adjacent teeth for receiving rollers of a chain, the roots having a constant root diameter d_f.

12. (Once Amended) A sprocket for a roller or bushing chain and sprocket system according to claim 11, wherein the first flank profile is defined by a tooth flank radius r_{e1}, the tooth flank radius r_{e1} varying between a maximum tooth flank radius r_{e1} max and a minimum tooth flank radius r_{e1} min, and the second flank profile is defined by a tooth flank radius r_{e2} different from the tooth flank radius r_{e1}, the tooth flank radius r_{e2} varying between a maximum tooth flank radius r_{e2} max and a minimum tooth flank radius r_{e2} min.

13. (Once Amended) A sprocket for a roller or bushing chain and sprocket system according to claim 12, wherein the flank

profiles between each pair of adjacent teeth have an angle α between the root radius r_1 and the tooth flank radius, the angle α varying according to the adjacent flank profiles effective to maintain tangency between each tooth flank radius and root radius r_1.

14. (Once Amended) A sprocket for a roller or bushing chain and sprocket system according to claim 12, wherein the sprocket comprises teeth having at least a third flank profile, the third flank profile being different from the first and second flank profiles, the first, second, and third flank profiles arranged in a pattern effective to reduce noise generated by contact between the chain and the sprocket.

15. (Once Amended) A sprocket for a roller or bushing chain and sprocket system according to claim 14, wherein the third flank profile is defined by a tooth flank radius r_{e3} different from the tooth flank radius r_{e1} and the tooth flank radius r_{e2}, the tooth flank radius r_{e3} varying between a maximum tooth flank radius r_{e3} max and a minimum tooth flank radius r_{e3} min.

16. (Once Amended) A sprocket for a roller or bushing chain and sprocket system according to claim 10, wherein the first and second flank profiles are selected so that the sprocket engages the chain at a different pressure angle for teeth having the first flank profile than for teeth having the second flank profile.

17. (Once Amended) A sprocket for a roller or bushing chain and sprocket system according to claim 10, wherein the sprocket has a constant outer diameter d_a.

18. (Once Amended) A sprocket for a roller or bushing chain and sprocket system according to claim 10, wherein the first and second flank profiles are selected to maintain a constant chordal pitch between adjacent teeth.

19. (Once Amended) A sprocket for a roller or bushing chain and sprocket system according to claim 10, wherein each tooth has a first side and a second side, the first and second sides for each respective tooth having an identical tooth flank radius r_{en}.

20. (Once Amended) A method of making a sprocket for a roller or bushing chain and sprocket system, the method comprising:

defining a plurality of teeth disposed about the circumference of the sprocket, the sprocket teeth each having a flank profile;

providing at least a first flank profile and at least a second flank profile, the second flank profile being different from the first flank profile; and

arranging the first and second flank profiles in a pattern effective to reduce noise generated by contact between the rollers or bushings of the chain and the sprocket.

21. A method of making a sprocket according to claim 20, including providing roots between adjacent teeth for receiving rollers of a chain, each root having a radius r_1 and the roots having a constant root diameter d_f.

22. (Once Amended) A method of making a sprocket according to claim 21, including defining the first flank profile by a tooth flank radius r_{e1}, the tooth flank radius r_{e1} varying between a maximum tooth flank radius r_{e1} max and a minimum tooth flank radius r_{e1} min, and defining the second flank profile a tooth flank radius r_{e2} different from the tooth flank radius r_{e1}, the tooth flank radius r_{e2} varying between a maximum tooth flank radius r_{e2} max and a minimum tooth flank radius r_{e2} min.

25. (Once Amended) A method of making a sprocket according to claim 24, including defining the third flank profile by a tooth flank radius r_{e3} different from the tooth flank radius r_{e1} and the tooth flank radius r_{e2}, the tooth flank radius r_{e3} varying

between a maximum tooth flank radius r_{e3} max and a minimum tooth flank radius r_{e3} min.

30. (Once Amended) A sprocket for a roller or bushing chain and sprocket system, the sprocket comprising:

a plurality of teeth disposed about the circumference of the sprocket, the sprocket teeth each having a flank profile;

at least a first flank profile and at least a second flank profile, the second flank profile being different from the first flank profile; and

means for arranging the first and second flank profiles to reduce noise generated by contact between the rollers or bushings of the chain and the sprocket.

31. (Once Amended) A sprocket for a roller or bushing chain and sprocket system, the sprocket comprising:

a plurality of teeth disposed about the circumference of the sprocket, the sprocket teeth each having a flank profile; and

at least a first flank profile, at least a second flank profile, and at least a third flank profile, the first flank profile being different from the second and third flank profiles and the second flank profile being different from the third flank profile, the first, second, and third flank profiles arranged in a pattern effective to reduce noise generated by contact between the rollers or bushings of the chain and the sprocket.

32. (Once Amended) A sprocket for a roller chain and sprocket system, the sprocket comprising:

a plurality of teeth disposed about the circumference of the sprocket, the sprocket teeth each having a flank profile with a tooth flank radius r_e, each tooth having first and second sides having an identical tooth flank radius r_e;

roots defined between pairs of adjacent teeth for receiving rollers of the roller chain, each root having a root radius r_1; and

a plurality of different flank profiles each having a different tooth flank radius r_{en}, the teeth flank radii varying between a maximum tooth flank radius r_e max and a minimum tooth flank radius r_e min, the different flank profiles arranged in a pattern effective to reduce noise generated by contact between the roller chain and the sprocket by varying the pressure angle at which the roller chain contacts the roots while maintaining a constant [outer] root diameter d_f and a constant addendum circle diameter d_a.